

Essential Fish Habitat Assessment

PORT OF THE AMERICAS

PREPARED FOR:

Port of the Americas Authority



PREPARED BY:



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1.0 INTRODUCTION

The Commonwealth of Puerto Rico (Commonwealth) proposes the development of the Port of the Americas (PTA or the Project) in the southern region of the Island. The Port of the Americas Authority (PAA, by its Spanish acronym) serves as the principal agency and Applicant within the Commonwealth responsible for obtaining the permits and endorsements required for the development of the PTA. The Project includes the expansion and modification of the Port of Ponce into a deep-draft port designed to provide world-class facilities for the anchorage of Post-Panamax cargo ships, and for the transshipment of cargo containers for international and local markets.

Elements of the PTA would be located in aquatic areas identified as Essential Fish Habitat (EFH) in the 1998 Amendment to the Fishery Management Plans prepared by the Caribbean Fishery Management Council (CFMC). EFH, as defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act, 1976), includes those waters and substrates necessary to the fish for spawning, breeding, feeding, or growth to maturity. The areas identified as EFH within the elements of the PTA were analyzed to determine potential individual and cumulative impacts from the development of the Project.

The following measurement indicators were used for this analysis:

- Identification and description of EFH within the areas proposed for development as part of the PTA.
- Identification of managed species of concern and their life stages.
- Definition of the potential individual and cumulative effects on these species and their habitats from the proposed actions.
- Identification of alternatives to the design of the PTA that have been considered to avoid or minimize effects to EFH.
- Identification of any compensatory mitigation measures that could be implemented to compensate for the unavoidable impacts to EFH.

The 1996 amendments to the Magnuson-Stevens Act mandate that the National Marine Fisheries Service (NMFS), Regional Fisheries Management Councils (FMC), and other Federal agencies, identify and protect important marine fish habitat. The CFMC, with assistance from the NMFS, has delineated Essential Fish Habitats (EFH) for federally managed species within the Caribbean waters under the jurisdiction of federal agencies which, fund, permit or carry out activities that may adversely affect EFH. The pertinent federal agencies are required to consult with NMFS regarding the potential impacts of their actions on EFH, and respond in writing to NMFS or FMC recommendations.

The CFMC identified a series of areas in Puerto Rico and the Virgin Islands as EFH. These EFH include waters and substrates that are necessary for the reproduction, growth and feeding of marine species. To determine these EFH's, 17 of the 139 commercially valuable marine fish and invertebrate species were selected to be monitored through their different life stages. The CFMC suggest that the EFH of these 17 species represent those of the other 122 species (CFMC, 1998). The 17 managed

species are: 1) *Epinephelus fulvus* (coney); 2) *Epinephelus guttatus* (red hind); 3) *Epinephelus striatus* (nassau grouper); 4) *Lutjanus analis* (mutton snapper); 5) *Lutjanus apodus* (schoolmaster); 6) *Lutjanus griseus* (gray snapper); 7) *Lutjanus vivanus* (silk snapper); 8) *Ocyurus chrysurus* (yellowtail snapper); 9) *Haemulon plumieri* (white grunt); 10) *Chaetodon striatus* (banded butterflyfish); 11) *Balistes vetula* (queen triggerfish); 12) *Holocentrus ascensionis* (squirrelfish); 13) *Malacanthus plumieri* (sand tile fish); 14) *Sparisoma chrysopterum* (redtail parrotfish); 15) *Lactophrys quadricornis* (trunkfish); 16) *Panulirus argus* (spiny lobster); and 17) *Strombus gigas* (queen conch).

Since all of these species occur in all habitats within the Caribbean waters under federal jurisdiction, the EFH includes all waters and substrates, including coral habitats, submerged vegetation, and adjacent intertidal vegetation, including wetlands and mangroves. Therefore, EFH includes virtually all marine waters and substrates from the shoreline to the seaward limits of the Exclusive Economic Zone (EEZ), which extends 200 miles from the shore. For Puerto Rico and the U.S. Virgin Islands, this represents an area of approximately 76,252 square miles (48.8 million acres).

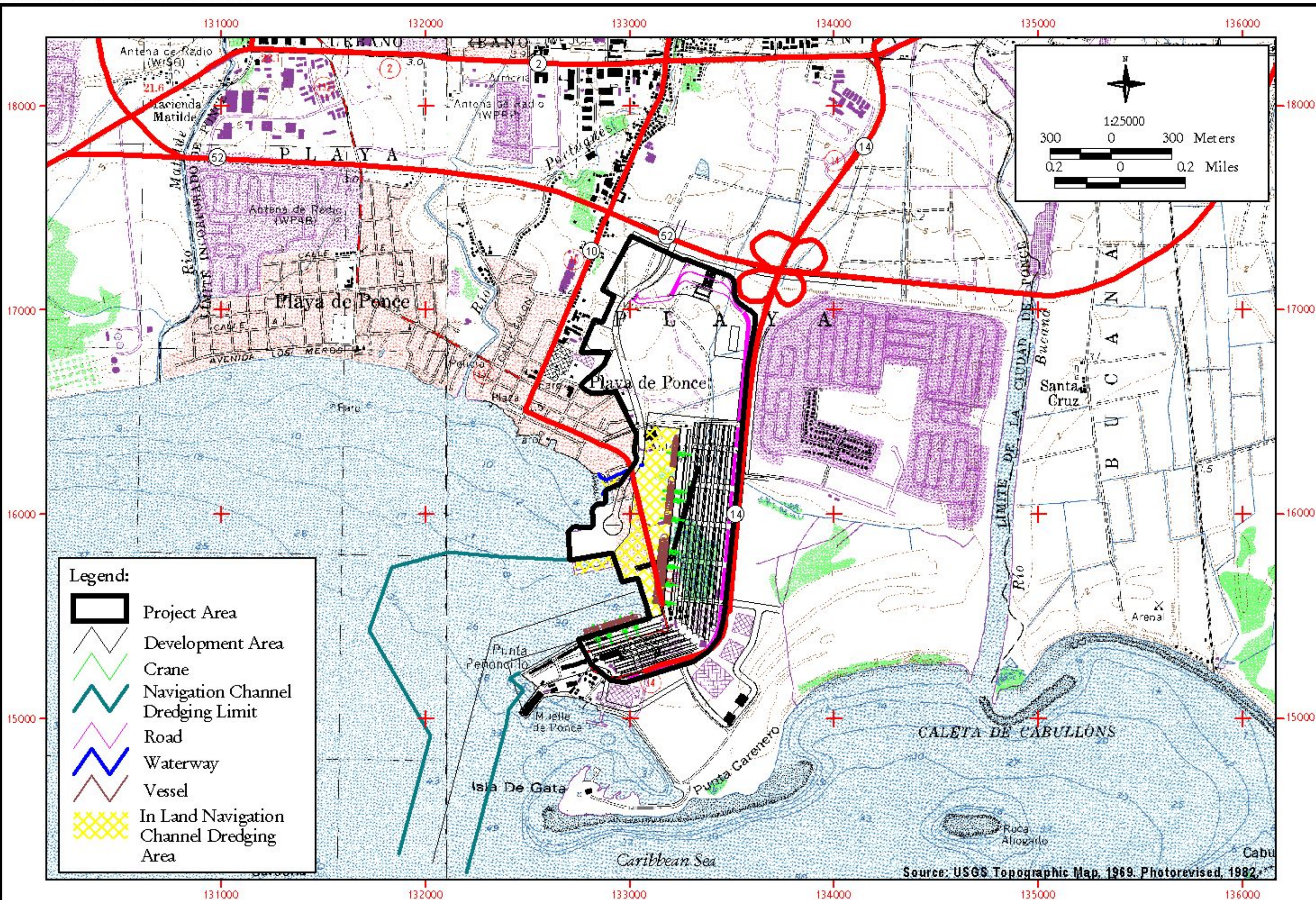
2.0 PROJECT DESCRIPTION

The Applicant's Preferred Alternative for the development of the PTA, includes the following elements:

- Construction of an inland navigation and mooring channel with a maximum length of 4,000 ft, approximately 800 feet wide, and with a depth below mean sea level of 50 feet. The channel entrance will be placed approximately where Pier 7 and a portion of Pier 8 of the Port of Ponce are currently located. The length of the channel will be aligned parallel to Highway PR-14 (Los Caballeros Avenue) and will reach the limits of what is known today as the PERCON property. Channel construction will entail the removal of approximately 4.2 million cubic meters of soil east of the Ponce Harbor;
- The fill of approximately 59 acres of arboreal wetlands adjacent to the Port of Ponce, for the storage of containers and cargo;
- The deepening of the existing navigation channel at Ponce Bay and berthing areas adjacent to existing to existing piers to a minimum depth of 50 feet to allow entry to the port of Post-Panamax ships. The proposed dredging would require disposal approximately 5.5 million cubic meters of dredged material at an offshore oceanic marine disposal site (ODMDS) designated by the USEPA for this purpose; and,
- Most of the material excavated to construct the inland channel would be reutilized for filling the wetlands adjacent to the port and elevating areas designated for storage of containers at the Percom property. Any residual material will be discharged at an authorized upland or landfill.
- Improvements to the Port of Ponce as follow:
 - Expansion of the Port facilities by an additional 135 acres of uplands;

- Initial acquisition and installation of four (4) Post-Panamax cranes to unload and load containers on ships. At its peak, the operation is expected to employ a total of 12 cranes, which will be acquired as the port activities expand;
- Development of approximately 132 acres of upland area adjoining the Port of Ponce, for construction of the main access to the Project, container storage, and value-added activities such as industries, commerce, offices and warehouses, shops and other infrastructure needed for the efficient operation of the Port of Ponce;
- Improvements to the existing infrastructure of the area, including, roads, water, power, communications and security in the new PTA installations at Ponce.

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Coordinates in State Plane NAD 27



Figure 2.1 Location Map: Ponce Bay Site

Port of the Americas



3.0 EFH AT THE PONCE BAY

3.1 Benthic Habitats

Approximately 61 percent of the benthic area of Ponce Bay consists of a flat, uniform and un-vegetated soft mud, according to investigations by García (2001, 2003) of the benthic bottom composition of the bay. Another 35 percent consists of a mud-*Halophila decipiens* complex. Other bottom habitats found within the proposed fill area include sand, mixed-algae mud, seagrasses, and coral reefs.

The investigations by García (2003) conclude that the species diversity in the habitats within the Ponce Bay are low in comparison to similar environments. Benthic habitats were quantified regarding the proposed footprint for the PTA. The graphical distribution of species in the bay relative to the footprint of the project is shown in Figure 3-1. The areal extension of these habitats is summarized in Table 3-1.

TABLE 3-1. BENTHIC HABITAT ASSESSMENT FOR PONCE BAY (GARCÍA, 2003)

Benthos	Area (m ²)	Area (acres)	Percent Total
Mud	892,327	220.5	61.4
Mud- <i>Halophila</i>	503,975	124.5	34.6
<i>Halodule</i>	33,853	8.4	2.3
Mixed algae and seagrasses	24,643	6.1	1.7
	1,454,727	359.4	100.0

A brief description of the main benthic communities within Ponce Bay is presented below.

3.1.1 Muddy Bottoms

García (2003) describes this habitat as a relatively smooth bottom, usually lacking vegetation cover. It is the most common bottom substrate of the Ponce Bay, especially on the deeper portions, including the navigation channel. At depths between 4 to 10 meters this area is sparsely covered by Midrib grass (*Halophila decipiens*). Deeper areas are unvegetated. These areas were previously impacted by a prior dredging of the Port of Ponce and navigation channels (1986-87). The dredging most likely completely transformed the original benthic communities into muddy bottoms.

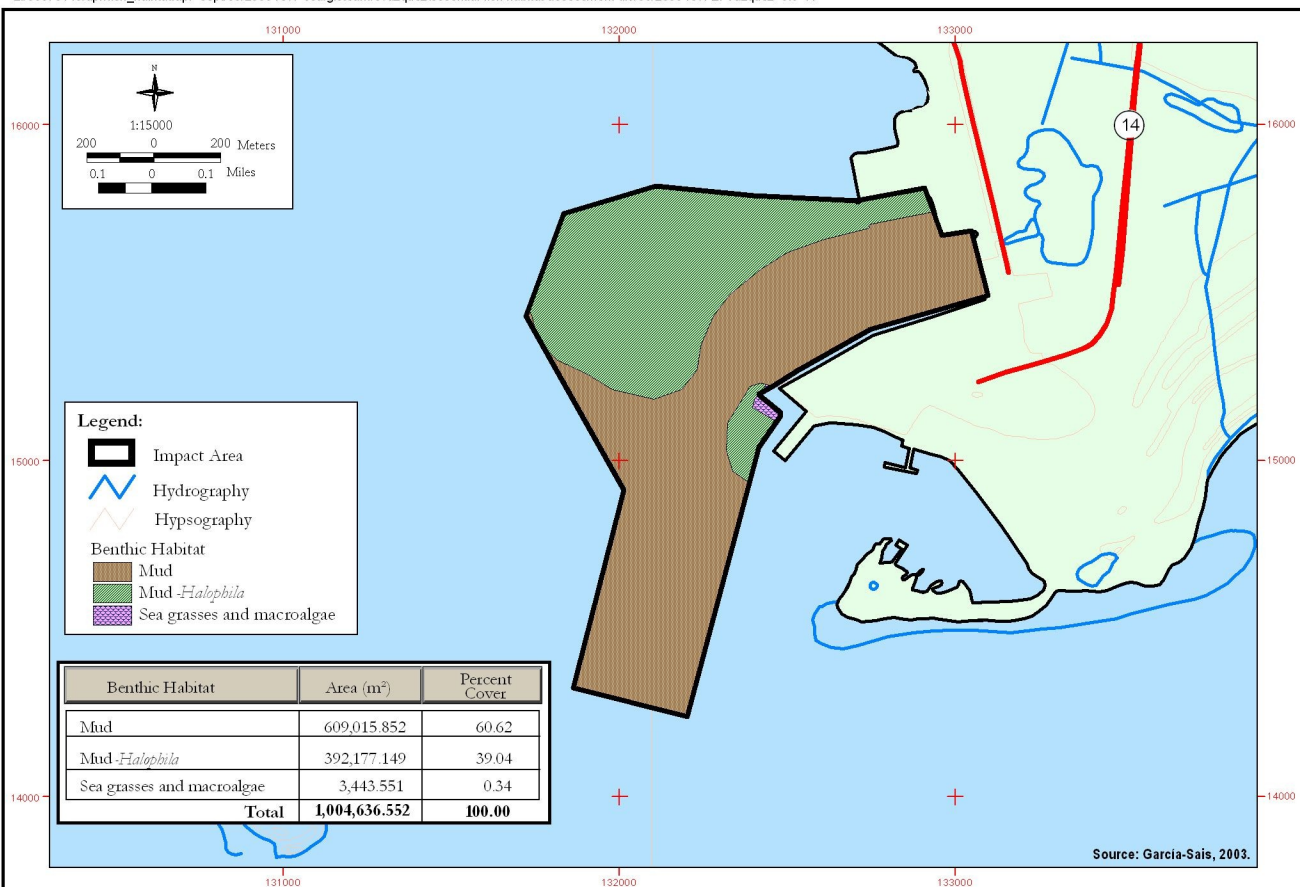


Figure 3.1 Benthic Habitat Assessment: Ponce Bay Site

Port of the Americas



Burrowing organisms dominate the faunal composition of the muddy benthos. These include crustaceans, mollusks, polychaete worms and fish of the genus *loglossus*. The deeper portions of Ponce Bay also include gorgonians. Most of the fauna could be considered as detritivores. Some predatory species are also present (i.e. snappers), sometimes in large numbers. The managed species reported for this habitat in Ponce Bay are adults white grunt, mutton snapper and silk snapper (García, 2001; 2003). There are no records of the presence of eggs, larvae, juveniles or spawners of the managed finfish species in muddy bottoms. Based on this information, the areas proposed for dredging in Ponce Bay can be identified as EFH for adult white grunts and, the mutton and silk snappers.

3.1.2 Seagrasses

Seagrasses in Ponce Bay occur as discontinuous fringes along the northern shoreline. Green seagrass (*Halodule wrightii*) is the main seagrass species in the area. A small (0.5 acre) stand of turtle grass (*Thalassia testudinum*) was observed on the eastern section of the Ponce Bay. Seagrass patches are found at depths of less than four meters within the bay. The seagrass also associate with macroalgae to form mixed assemblages at depths between 0.5 to 2.0 meters. The macroalgal species associated in these assemblages include red (*Gracilaria* sp.), brown (*Dyctiota* sp. and *Sargassum* sp.) and green algae (*Halimeda* sp., *Udotea* sp., *Penicillum* sp., *Caulerpa* sp., and *Acetabularia* sp.). Several schools of plankton-feeding fish species were observed moving through the seagrass area. Invertebrates, such as the West Indian fighting conch (*Strombus pugilis*) also occur in the area.

3.1.3 Coral Reefs

Coral reefs are poorly represented in the Ponce Bay (García et al., 1985a; 1985b). This habitat is mostly restricted to the vicinity of Isla de Gata, Isla Cardona and Las Hojitas reef. These reefs are highly degraded, possibly influenced by poor light incidence and high levels of sedimentation and abrasion stress (García, 2003). The dominant corals in Ponce Bay's reef systems are gorgonians (soft corals). Encrusting organisms, such as coralline algae, zoanthids and sponges, cover approximately 80 percent of these reefs. The spiny lobster was observed near Isla Gata and Las Hojitas reefs. Several commercially important species of finfish were sighted within these reefs, including coney, mutton snapper; schoolmaster, gray snapper, yellowtail snapper, banded butterflyfish, and spiny lobster. According to García (2003), there are no coral reefs within the dredging area proposed by the Project (Table 3-1).

3.2 Non-benthic Habitats

An important non-benthic habitat within Ponce Bay is the water column. A brief description of this non-benthic habitat is presented below.

3.2.1 Water Column

This natural corridor is very important for the dispersion of eggs and planktonic larvae of marine fish and invertebrates by means of ocean currents. The water column has been identified as EFH for the planktonic life stages of all of the 15 managed finfish species identified by the CFMC. Predatory fish and their prey move between benthic habitats through this system.

3.3 Commercially Important Marine Species at Ponce Bay

The managed species reported for Ponce Bay are coney, mutton snapper, schoolmaster, gray snapper, silk snapper, white grunt, yellowtail snapper, banded butterflyfish, and spiny lobster (García et al., 1985a; 1985b; García, 2003).

3.3.1 Distribution and Habitat Preference of Managed Species at Ponce Bay

A summary of the documented habitat preferences by life stages of the managed species reported for Ponce Bay is included in Table 3.2.

TABLE 3-2. HABITAT PREFERENCES: LIFE STAGES OF MANAGED MARINE SPECIES AT PONCE BAY.

The results are presented as presence (P), absence (A) or if no information is available (N). Sources: García et al. (1985a; 1985b), Castro and García (1996), CMFC (1998), García (2002), and García (2003).

Species	Planktonic	Mangrove	Seagrasses	Reefs	Mud
<i>Chaetodon striatus</i> (banded butterflyfish)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	P	P	P	N
Adults	A	P	P	P	A
Reproductive	A	A	A	P	A
<i>Epinephelus fulvus</i> (coney)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	A	A	P	A
Adults	A	A	N	P	A
Reproductive	A	A	A	N	A
<i>Haemulon plumieri</i> (white grunt)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	P	P	P	A
Adults	A	N	P	P	P
Reproductive	A	A	A	P	N
<i>Lutjanus analis</i> (mutton snapper)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	P	P	P	P
Adults	A	P	P	P	P
Reproductive	A	A	A	P	N
<i>Lutjanus apodus</i> (schoolmaster)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	P	P	P	P
Adults	A	P	A	P	A
Reproductive	A	N	N	P	A
<i>Lutjanus griseus</i> (gray snapper)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	P	P	P	P
Adults	A	P	P	P	N
Reproductive	A	A	A	P	N
<i>Lutjanus vivanus</i> (silk snapper)					
Eggs	P	A	A	A	A
Larvae	P	A	A	A	A
Juveniles	A	P	P	P	P
Adults	A	P	P	P	P

Species	Planktonic	Mangrove	Seagrasses	Reefs	Mud	
	Reproductive	A	A	A	P	N
<i>Ocyurus chrysurus</i> (yellowtail snapper)						
	Eggs	P	A	A	A	A
	Larvae	P	A	A	A	A
	Juveniles	A	P	P	P	N
	Adults	A	N	P	P	A
	Reproductive	A	A	A	P	A
<i>Panulirus argus</i> (spiny lobster)						
	Eggs	P	A	A	A	A
	Larvae	P	A	A	A	A
	Juveniles	A	P	P	P	A
	Adults	A	P	P	P	A
	Reproductive	A	N	N	P	A

4.0 IMPACT OF THE PTA ON THE EFH AT THE PONCE SITE

The proposed dredging in Ponce Bay would impact approximately 359.4 acres of shallow sea floor, consisting mainly of soft, muddy bottom habitat and a mix of seagrasses (< 10%) and macro algae.

The impacts to the muddy bottoms associated to the dredging activities at the Ponce Bay would temporary affect designated EFH for mutton snapper, silk snapper, and adults of white grunt. These fish may not use the area due to the presence of machinery and the increase in turbidity associated to the re-suspension of sediments. The dredged sediments would be disposed in the ODMDS approved by USEPA as previously indicated (EPA, 1988). USEPA and USACE recently completed the revisions to the management plan for the planned disposal at the ODMDS.

Pier construction should not affect any EFH as it would be done inland within the mooring channel. Seawater would be allowed to enter the mooring channel after all inland construction of the piers and holding facilities are completed. The foreseeable impacts associated to the proposed piers during operation include the release of chemicals into the water from the pilings, but this is not perceived as a major concern, as pilings usually sustain a diverse community of encrusting organisms.

The increased shipping traffic that would be related to the PTA may result in an increase in turbidity by re-suspension of sediments. However, a study of the ocean currents within Ponce Bay concluded that the overall water flow through this bay would not change significantly with the new pier facilities (Scheffner et al., 2001). Also, a parallel study of resuspension of sediments due to passage of ships at the Guayanilla Harbor (García, 2001) demonstrated that the increases in turbidity from this activity are temporary and limited laterally to the navigation areas.

The proposed facilities in the Ponce area may also present the following threats to EFH within Ponce Bay.

- Water quality degradation may occur from point and non-point source runoff associated to materials such as oils from paved roads and parking lots, vehicle fuel, and substances used for the maintenance of roads and other industrial facilities, including paints, grease, and solvents.
- Also, spills and accidental discharges of hazardous materials are a constant concern in this type of facilities. These are rare events but their immediate impact could be severe.
- Another concern is the accidental discharge of marine debris, trash and organic wastes from ships. Although the control of these materials is highly regulated by USEPA, such byproducts could adversely affect fish and, both, marine birds and mammals.
- A further potential threat is the introduction of exotic species. Commercial vessels visit a large number of international destinations, which provide an excellent and rapid dispersal mechanism for exotic, and potentially harmful, species.

5.0 MITIGATION MEASURES TO COMPENSATE FOR THE UNAVOIDABLE IMPACTS TO EFH AT PONCE BAY

The proposed dredging and pier construction at the Ponce Bay would affect soft muddy bottom habitats. The effects of the temporary siltation and turbidity resulting from construction activities would be mitigated by the use erosion control measures, such as silt curtains or other silt retention barriers. Sediment discharges related to the inland pier construction should cease once these activities end.

As stated in the previous section, point and non-point source runoff may affect water quality. To reduce these possible impacts, the Project design will incorporate “stormceptors”, which are structural chambers designed and proven to reduce oil, grease, and sediment discharges to water bodies.

No seagrass habitat would be impacted hence no mitigation would be needed for this action.

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